AMENDMENT TO THE CLAIMS

Replace the claims with the following rewritten listing.

1. (Currently Amended) Hardware implemented filtering method comprising:

establishing a representation ~~(DIS)~~ of a derivative of at least a part of a time-quantized pulse width modulated input signal ~~(IS)~~, and

establishing at least one sample of a time- and amplitude-quantized pulse code modulated output signal ~~(OS)~~ by performing filtering on the basis of at least a part of a filter representation ~~(IFC1, IFC2, IFC3)~~ and said representation ~~(DIS)~~ of the derivative of at least a part of said input signal ~~(IS)~~;

whereby said performing filtering is arranged to omit arithmetic operations involving such samples of said representation of the derivative of at least a part of said input signal that are derived from identically valued contiguous samples of said time-quantized input signal.

2. (Currently Amended) Hardware implemented filtering method according to claim 1, whereby said establishing at least one sample of a time- and amplitude-quantized output signal is implemented according to a h~~H~~ardware implemented method of convolving in a time domain an input signal ~~($x[n]$)~~ with an impulse response ~~($h[k]$)~~ in order to establish an output signal ~~($y[n]$)~~, comprising:

providing said output signal ~~($y[n]$)~~ at least partly by a convolution in the time domain of a difference signal representation ~~($x^{-}[n]$)~~ of said input signal ~~($x[n]$)~~ and a sum representation ~~($l[k]$)~~ of said impulse response ~~($h[k]$)~~.

3. (Cancelled)

4. (Previously Presented) Hardware implemented filtering method according to claim 2, whereby said impulse response is finite.

5. (Currently Amended) Hardware implemented filtering method according to claim 1, whereby said time-quantized input signal ~~(IS)~~ comprises in average at least 10 samples for each input signal value change.

6. (Cancelled)

7. (Currently Amended) Hardware implemented filtering method according to claim 1, whereby said establishing a representation ~~(DIS)~~ of the derivative of at least a part of said time-quantized input signal ~~(IS)~~ comprises establishing a sequence of differences between successive samples of said at least a part of said input signal ~~(IS)~~.

8. (Currently Amended) Hardware implemented filtering method according to claim 1, whereby said at least a part of said time-quantized input signal ~~(IS)~~ in respect of its length corresponds to the length of said at least a part of an impulse response.

9. (Currently Amended) Hardware implemented filtering method according to claim 1, whereby said representation ~~(DIS)~~ of the derivative of at least a part of said time-quantized input signal ~~(IS)~~ is stored in a differentiated input signal representing array ~~(DA)~~.

10. (Currently Amended) Hardware implemented filtering method according to claim 1, whereby said establishing a representation ~~(DIS)~~ of the derivative of at least a part of a time-quantized input signal ~~(IS)~~ comprises indexing corresponding times and directions of amplitude changes of said at least a part of said input signal ~~(IS)~~.

11. (Currently Amended) Hardware implemented filtering method according to claim 1, whereby the length of said at least a part of said filter representation ~~(IFC1, IFC2, IFC3)~~ is an integer multiple of the length of a symbol of said at least a part of said time-quantized input signal ~~(IS)~~.

12. (Previously Presented) Hardware implemented filtering method according to claim 1, whereby a number of changes within a symbol of said at least a part of said time-quantized input signal is constant.

13. (Previously Presented) Hardware implemented filtering method according to claim 1, whereby said times are indexed relative to each other.

14. (Currently Amended) Hardware implemented filtering method according to claim 1, whereby said establishing a representation ~~(DIS)~~ of the derivative of at least a part of a time-quantized input signal ~~(IS)~~ comprises storing into a snapshot register ~~(SR)~~ said at least a part of said time-quantized input signal ~~(IS)~~.

15. (Currently Amended) Hardware implemented filtering method according to claim 1, whereby said establishing a representation ~~(DIS)~~ of the derivative of at least a part of a time-quantized input signal ~~(IS)~~ comprises querying said snapshot register ~~(RS)~~ regarding input signal changes.

16. (Currently Amended) Hardware implemented filtering method according to claim 1, whereby said at least a part of said filter representation ~~(IFC1, IFC2, IFC3)~~ is a sum representation of at least a part of an impulse response.

17. (Currently Amended) Hardware implemented filtering method according to claim 1, whereby said at least a part of said filter representation ~~(IFC1, IFC2, IFC3)~~ is predetermined.

18. (Currently Amended) Hardware implemented filtering method according to claim 1, whereby said at least a part of said filter representation ~~(IFC1, IFC2, IFC3)~~ is implemented by means of at least one filter coefficient.

19. (Currently Amended) Hardware implemented filtering method according to claim 1, whereby said at least a part of said filter representation ~~(IFC1, IFC2, IFC3)~~ is implemented by means of at least one model, comprising at least one polynomial.

20. (Currently Amended) Hardware implemented filtering method according to claim 1, whereby said implementation of said at least a part of said filter representation ~~(IFC1, IFC2, IFC3)~~ is adapted to utilize any symmetry of said filter representation.

21. (Currently Amended) Hardware implemented filtering method according to claim 1, whereby said at least a part of said filter representation ~~(IFC1, IFC2, IFC3)~~ is user-adjustable.

22. (Currently Amended) Hardware implemented filtering method according to claim 1, whereby said performing filtering comprises convolving said at least a part of said filter representation ~~(IFC1, IFC2, IFC3)~~ with said representation ~~(DIS)~~ of the derivative of at least a part of said time-quantized input signal ~~(IS)~~.

23. (Currently Amended) Hardware implemented filtering method according to claim 1, whereby said performing filtering further comprises for each of said at least one sample of a time- and amplitude-quantized output signal ~~(OS)~~ adding the result of multiplying an initial value ~~(IV)~~ of said at least a part of said time-quantized input signal ~~(IS)~~ with a value of said at least a part of said filter representation ~~(IFC1, IFC2, IFC3)~~.

24. (Currently Amended) Hardware implemented filtering method according to claim 1, whereby said performing filtering further comprises adding, for each of said at least one sample of a time- and amplitude-quantized output signal ~~(OS)~~, an initial value ~~(IV)~~ of said at least a part of said time-quantized input signal ~~(IS)~~.

25. (Currently Amended) Hardware implemented filtering method according to claim 1, whereby said performing filtering comprises exercising the expression

$y[n]=\sum_{k=0}^{N-2}\left(l[k]\cdot x'[n-k]\right)+l[N-1]\cdot x[n-(N-1)]$, where $y[n]$ represents said at least one sample of a time- and amplitude-quantized output signal ~~(OS)~~, $x[n]$ represents said at least a part of said time-quantized input signal ~~(IS)~~, $x'[n]$ represents said representation ~~(DIS)~~ of the derivative of $x[n]$, $l[k]$ represents said at least a part of said filter representation ~~(IFC1, IFC2, IFC3)~~, and N represents the length of $l[k]$.

26. (Previously Presented) Hardware implemented filtering method according to claim 1, whereby said performing filtering further comprises performing conventional filtering.

27. (Currently Amended) Hardware implemented filtering method according to claim 1, whereby a sample rate of said time- and amplitude-quantized output signal ~~(OS)~~ is different from a sample rate of said time-quantized input signal ~~(IS)~~.

28. (Currently Amended) Hardware implemented filtering method according to claim 1, whereby a sample rate of said time- and amplitude-quantized output signal ~~(OS)~~ corresponds to a symbol rate of said time-quantized input signal ~~(IS)~~.

29. (Currently Amended) Hardware implemented filtering method according to claim 22, whereby said convolving said at least a part of said filter representation ~~(IFC1, IFC2, IFC3)~~ with said representation ~~(DIS)~~ of the derivative of at least a part of said time-quantized input signal ~~(IS)~~ is performed for only some of the samples of said time-quantized input signal ~~(IS)~~.

30. (Currently Amended) Hardware implemented filtering method according to claim 1, whereby said filter representation ~~(IFC1, IFC2, IFC3)~~ comprises a sum representation of a low-pass filter.

31. (Previously Presented) Hardware implemented filtering method according to claim 1, whereby said method is exercised in real time.

32. (Currently Amended) Hardware implemented filtering method according to claim 1, whereby said at least a part of a filter representation ~~(IFC1, IFC2, IFC3)~~ represents at least a part of an impulse response.

33. (Currently Amended) Hardware implemented filtering method according to claim 1, whereby said at least a part of a filter representation ~~(IFC1, IFC2, IFC3)~~ represents the derivative of at least a part of an impulse response.

34. (Currently Amended) Hardware implemented filtering method according to claim 1 further comprising the step of

integrating at least once said time- and amplitude-quantized output signal ~~(OS)~~.

35. (Currently Amended) Hardware implemented decimation method for decimating a time-quantized pulse width modulated input signal ~~(IS)~~ comprising:

dividing said time-quantized input signal ~~(IS)~~ into intervals,

for each of said intervals establishing a sample of a time- and amplitude-quantized pulse code modulated output signal ~~(OS) according to claim 1~~by performing filtering on the basis of at least a part of a filter representation and a representation of a derivative of at least a part of said input signal;

whereby said performing filtering is arranged to omit arithmetic operations involving such samples of said representation of the derivative of at least a part of said input signal that are derived from identically valued contiguous samples of said time-quantized input signal.

36. (Currently Amended) ~~Fast filtering means~~A filter arrangement ~~(FFM)~~ comprising:

a differentiator ~~differentiation means (DM)~~ for establishing a representation ~~(DIS)~~ of a derivative of at least a part of a time-quantized pulse width modulated input signal ~~(IS)~~, and

a filtering unit ~~means (FM)~~ for establishing at least one sample of a~~n~~ pulse code modulated output signal ~~(OS)~~ by performing filtering on the basis of at least a part of a filter representation ~~(IFC1, IFC2, IFC3)~~ and said representation ~~(DIS)~~ of the derivative of at least a part of said input signal ~~(IS)~~;

wherein said filtering unit is arranged to omit arithmetic operations involving such samples of said representation of the derivative of at least a part of said input signal that are derived from identically valued contiguous samples of said time-quantized input signal.

37. (Cancelled)